Name of The Course	Introduction to Digital Systems	L	T	P	C
Course Code	BEE01T1005	2	0	2	3
Version No					
Prerequisite					
Co requisite					
Anti- requisite					

Course Objectives

1. To familiarize with various Digital IC
2. To understand basic fundamentals of Digital circuits.
3. To prepare for various engineering applications.

Course Outcomes

Upon successful completion of this course, students will be able to

CO1	Solve the problems on Number system codes and their conversions.
CO2	Identify Digital IC and implement in the circuits.
CO3	Create, design and simulate canonical logic forms
CO4	Demonstrate the application of combinational and sequential logic circuits
CO5	Implement the basic circuits on embedded platform
CO6	Gain understanding of latest trends and research areas in the course

Text Book (s)

Sr. No.	Title	Author Name	Publisher	Year of Publication	Edition
1	Digital Electronics	R P Jain	McGraw Hill	2017	Second
2	Digital Logic and Computer Design	Morris Mano	PHI	2017 review	Second
3	Digital Electronic Principles-	Malvino	PHI	2011-13	Seventh

Course Content

Unit-I: Number Systems & Boolean Algebra
Decimal, binary, octal, hexadecimal number system and conversion, binary weighted & non-weighted codes & code conversion, signed numbers, 1s and 2s complement codes, Binary arithmetic, Binary logic functions, Boolean laws, truth tables, associative and distributive properties, De-Morgan's theorems, realization of switching functions using logic gates. Logic families: TTL, ECL, CMOS.
Unit-II: Combinational Logic:
Switching equations(Mathematical operations), canonical logic forms, sum of product & product of sums, Karnaugh maps, two, three and four variable Karnaugh maps, simplification of expressions, mixed logic combinational circuits, multiple output functions, QuineMcluskey Methods for 5 variables. Introduction to combinational circuits, code conversions, decoder, encoder, priority encoder, multiplexers & De-multiplexer, binary adder, Subtractor, BCD adder, carry look ahead adder, Binary comparator, Arithmetic Logic Units.
Unit-III: Sequential Logic & Circuits:
Latch, flip-flops, clocked and edge triggered flip-flops, timing specifications, asynchronous and synchronous counters counter design, Registers, types of registers. Analysis of simple synchronous sequential circuits

List of Experiment
• To study the basic logic gates
  • Verify their truth table.
  • Verification of De Morgan's Theorem.
• Verification Of SOP & POS Given Algebraic Expression Using Universal Gates.
• Designing of HALF and Full adder using basic logic gates.
• Design of 4:1 MULTIPLEXER USING GATES.
• Design and Implementation of 1-bit Magnitude Comparator using basic logic gates.
• Design and Verification of S-R Flip-Flop Circuits.
• Realization of 3-bit synchronous counter design For Various Application.
  • Frequency counters
  • Digital clock
  • Time measurement
• Project based learning: Building of LED Series / Seven Segment LED / Display unit.